

Appl. No. 09/452,691
Reply to Office action of 07/02/2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): An integrated circuit comprising:

a lower metal interconnect layer located over a semiconductor body;
a multi-level dielectric layer located over said lower interconnect layer;
an upper metal interconnect layer located over said multi-level dielectric layer;

and

a thin film resistor embedded within said multi-level dielectric layer between said lower metal interconnect layer and said upper metal interconnect layer, wherein said thin film resistor comprises a resistor layer that is physically separated, in its entirety, in a vertical direction from any metal interconnect layer.

Claim 2 (previously presented): The integrated circuit of claim 1, further comprising:

a first via extending from said upper metal interconnect layer to said lower interconnect layer; and
a second via extending from said upper metal layer to said thin film resistor.

Claim 3 (original): The integrated circuit of claim 1, wherein said thin film resistor comprises a hard mask located over an end of the thin film resistor.

Claim 4 (original): The integrated circuit of claim 3, wherein said hard mask comprises TiW.

Claim 5 (original): The integrated circuit of claim 3, wherein said hard mask comprises TiN.

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Claim 6 (original): The integrated circuit of claim 1, wherein said thin film resistor comprises TaN.

Claim 7 (original): The integrated circuit of claim 1, wherein said thin film resistor comprises SiCr.

Claim 8 (original): The integrated circuit of claim 1, wherein said thin film resistor comprises

NiCr.

Claims 9-16 (cancelled)

Claim 17 (currently amended): An integrated circuit comprising a semiconductor chip that comprises:

a lower metal interconnect layer located over a semiconductor body;
a multi-level dielectric layer located over said lower interconnect layer;
an upper metal interconnect layer located over said multi-level dielectric layer;
and
a thin film resistor embedded within said multi-level dielectric layer between said lower metal interconnect layer and said upper metal interconnect layer.

Claim 18 (previously presented): The integrated circuit of claim 17, wherein the semiconductor chip further comprises:

a first plurality of conductively filled vias extending from said upper metal interconnect layer to said lower interconnect layer; and
a second plurality of conductively filled vias extending from said upper metal layer to said thin film resistor.

Claim 19 (new): An integrated circuit comprising:
a first metal interconnect layer;

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a second metal interconnect layer located over said first metal interconnect layer, there being no additional metal interconnect layers between said first and second metal interconnect layers;

a multi-level dielectric layer located between said first metal interconnect layer and said second metal interconnect layer; and

a thin film resistor embedded within said multi-level dielectric layer between said first metal interconnect layer and said second metal interconnect layer such that said multi-level dielectric layer separates said thin film resistor from both said first metal interconnect layer and said second metal interconnect layer.

Claim 20 (new): The integrated circuit of claim 19, wherein the integrated circuit further comprises:

a first plurality of conductively filled vias extending from said second metal interconnect layer to said first interconnect layer; and

a second plurality of conductively filled vias extending from said second metal layer to said thin film resistor.